Disease Management
An Overview

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COURSE OBJECTIVE: The purpose of this course is to prepare healthcare professionals to understand historical and emerging trends in disease management.

LEARNING OBJECTIVES
Upon completion of this course, you will be able to:

- Define “disease management.”
- Explain the pressures associated with the development of the disease management model of care.
- Describe the shifts in healthcare provision that led to the emergence of disease management.
- Discuss the business case for implementing disease management.
- Explain the disease management process.
- Describe the roles of disease management team members.
- Explain current healthcare policies and practices that will influence the future of disease management.

WHAT IS DISEASE MANAGEMENT?

According to the Population Health Alliance (2010), disease management (DM) is “a system of coordinated healthcare interventions and communications for populations with conditions in which patient self-care efforts are significant.”
The focus of disease management is empowering members with chronic medical conditions to engage in self-management activities and maintain medication adherence, in addition to adhering to evidence-based guidelines for chronic medical condition management. In doing so, members not only decrease the severity of illness and complications of chronic disease but also realize a decrease in the typical cost of care for chronic medical conditions.

(The term *member* is used in this course to describe those individuals who could benefit from participating in disease management programs as well as recipients of disease management programs provided by health plans via health insurance benefits, employers who provide insurance benefits to their employees, unions that provide health benefits, and federal or state-provided benefit plans such as Medicaid and Medicare.)

The practice of disease management has been well established since the 1980s within health plan, employer, health system, and community settings (Howe, 2005). The premise behind disease management is that individuals who understand how to assess and self-manage their chronic medical conditions can decrease the typical cost of care for conditions like diabetes, chronic obstructive pulmonary disease, and heart disease through improved condition management and decreased service utilization. According to the Centers for Disease Control and Prevention (2009), “Chronic diseases are noncommunicable illnesses that are prolonged in duration, do not resolve spontaneously, and are rarely cured completely.”

As outlined in the Pareto Principle, “approximately 20% of the population is responsible for approximately 80% of direct medical costs. Based on this, disease management companies seek to manage a large proportion of healthcare costs by directing resources toward a relatively small segment of the population” (Cousins et al., 2002).

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**CASE MEMBER**

Mr. Smith is a 57-year-old male with a 10-year history of heart failure following an acute myocardial infarction. His most recent echocardiogram revealed an ejection fraction (EF) of 38%. He experiences occasional symptomatic atrial fibrillation, shortness of breath, ankle swelling, palpitations, and fatigue. In the last eight months, he has required three emergency department visits for heart failure exacerbations.

Today, Mr. Smith is hosting his annual Super Bowl party with 20 of his longtime friends. Game day consists of preparing snacks of chips, wings, dip, ham and beans, soda, beer, and desserts. Mr. Smith is so busy preparing for the party that he forgets to take his medications (Lasix, Digoxin, Coumadin, and Carvedilol).

The following day, Mr. Smith calls in sick for his job as a bus driver because he is experiencing fatigue and swelling in his feet that make it challenging to put on his shoes. He eats his breakfast of ham, eggs, and orange juice. Throughout the day, his symptoms worsen. By noon, he is experiencing edema above his ankles, shortness of breath walking to the bathroom, and palpitations. He sits upright in his recliner in an attempt to ease his ability to breathe. He is
unable to eat lunch because of his abdominal discomfort. At 9 P.M., his wife calls 911 because Mr. Smith now has severe shortness of breath and says his heart is racing. As he has done numerous times before, he and his wife take an ambulance to the local emergency department for treatment of his severe, life-threatening symptoms. (continues)

THE PRESSURES ASSOCIATED WITH THE DEVELOPMENT OF DISEASE MANAGEMENT

Numerous pressures led to the development of the disease management model of healthcare. The most prominent were the:

- Increasing cost of healthcare services
- Aging American population
- Increasing numbers of Americans with chronic medical conditions
- Lack of consistent quality care across the various health settings in America
- Changing models of healthcare

Rising Healthcare Costs

Since the mid-1980s, healthcare costs have continued to increase. This inflation is attributed to a rise in insurance premiums, increased medication research and development costs, advances in condition diagnosis and treatment, greater inpatient and outpatient care, and higher administrative costs.

In 2009, the Social Security Advisory Board reported that the cost of healthcare in the United States was growing more rapidly than the incomes of those who pay for it. If these costs were to continue to rise exponentially into the future, the standards of living and economic security of retirees and workers alike would be put in jeopardy.

The predictions of the Social Security Advisory Board seem to have come to fruition. According to the CDC (2015), “Healthcare spending grew to 5.3% in 2014, which equates to $9,523 per person or 17.5% of the nation’s Gross Domestic Product (GDP). If left unabated, healthcare costs could be crippling to the most vulnerable populations.”

TECHNOLOGY

Technology is a source of rising healthcare costs. Callahan (2008) states that “40% to 50% of annual cost increases can be traced to new technologies or the intensified use of old ones.”

American healthcare, known for its innovation and advanced medical technology, is among the best in the world. The main drivers of medical technology are healthcare consumers and
healthcare providers. Callahan (2008) reports that 40% of Americans believe technology can always save their lives. This is evidenced by the fact that advances in technology have allowed people to effectively put off natural death for weeks, months, or years.

Medical technology allows earlier diagnosis of and provides more aggressive treatment for acute and chronic diseases. Technological advances have also led to less invasive surgeries, which lead to faster recovery times. However, purchasing the technology and training the providers to use it requires additional healthcare expenditures that can raise healthcare costs. Targeted therapies for cancer treatment and robotic surgery are two such examples of innovations that increase costs.

Skinner (2013) identifies three “bins” that drive the increase in healthcare costs associated with technological advances:

- Treatments with a high cost (health-benefit-per-dollar-spent-ratio)
- Treatments whose benefit is substantial in some, but not all, receiving treatment
- Treatments that either have little benefit or do not have strong evidence to support their use

In addition, the Affordable Care Act requires that all healthcare providers utilize digital technology to maintain patient records through electronic health record-keeping systems. The cost of implementation, in part, can be seen as an additional contributing factor to the cost of healthcare.

**RESEARCH AND DEVELOPMENT**

Research and development costs for new medications to treat chronic conditions have also contributed to the rising cost of healthcare. Drug development, manufacturing, and marketing is a costly business.

Drug manufacturers are able to recover a portion of these research and development costs through drug patents and exclusivity. Patents are granted for multiple stages of drug development and stay in place for a period of up to 20 years from filing with the U.S. Food and Drug Administration (FDA, 2014). Exclusivity grants sole marketing rights to a drug manufacturer, effectively limiting any other drug manufacturer from producing a generic version of the same medication that can be offered at a significantly reduced cost to members.

Exclusivity and patents increase consumers’ costs of obtaining newer medications that may prevent or treat chronic conditions or the effects of these conditions. Recent years have seen a rise in the number of specialty drugs used to treat chronic conditions at exorbitant costs to consumers. For example, in 2014, Harvoni, a specialty medication used to treat hepatitis C, cost $1,125 per pill, with a 12-week course of therapy totaling $94,000 (International Antiviral Society, 2015).
HEALTH INSURANCE

The most direct and visible cost of healthcare is health insurance coverage, often through employer group policies.

A survey of employer-sponsored health insurance plans released by the Kaiser Family Foundation (2015) found that between 1999 and 2015 health insurance premiums “increased by 203%, outpacing both inflation and workers’ earnings.” Between 2014 and 2015, workers experienced an increase in insurance premiums of 4%, averaging $6,251 for single and $17,545 for family coverage, while income increased only 1.9%. Additionally, “the average deductible for all covered workers in 2015 was $1,077, representing a 255% increase from the 2006 cost of $303.”

MEDICARE AND MEDICAID PROGRAMS

The federal government, a leading purchaser of healthcare services through its administration of Medicare and Medicaid programs, has also experienced increasing healthcare costs. In 2012, annual healthcare costs for a Medicare recipient with one or more chronic conditions were:

- $2,025 per individual with at least one chronic medical condition
- $5,698 per individual with 2 or 3 conditions
- $12,174 per individual with 4 or 5 conditions
- $32,658 per individual with over 6 conditions
- $9,738 per individual per year average

Likewise, of the 1.9 million Medicare hospital readmissions in 2010, Medicare beneficiaries with two or more chronic conditions accounted for almost all (98%) of these readmissions (CMS, 2012).

Aging Population

As Americans live longer, studies suggest more people will be diagnosed with at least one chronic medical condition over the course of their lifetime. The Administration on Aging (2014) projects that by the year 2040, 21.7% of the population will be over the age of 65, with the concomitant risk of developing a chronic medical condition.

Living longer and having a chronic medical condition requires more medical services and medications, with the greatest healthcare expenditures occurring in the last one to two years of life (NIA, 2011). Additionally, an analysis of Medicare utilization showed that individuals 80 years and older incur a greater amount of Medicare spending than their younger counterparts.
Increasing Prevalence of Chronic Health Conditions

Individuals with chronic conditions utilize healthcare services at a higher rate, comprising 81% of all hospital admissions, 91% of all prescriptions filled, and 76% of all physician visits (Partnership for Prevention, 2007).

According to the CDC (2013), in 2012, 117 million Americans were living with at least one chronic disease; of those, 1 in 4 were living with two or more chronic conditions. The leading cause of death in the United States was heart disease, which is attributed to such chronic conditions as elevated cholesterol levels, obesity, hypertension, and diabetes. Among Medicare recipients, the most common chronic medical conditions are high blood pressure, high cholesterol, ischemic heart disease, and arthritis (Partnership for Prevention, 2007).

The prevalence of chronic medical conditions continues to increase in part due to advances in technology that not only provide early detection of chronic medical conditions but also allow treatment for conditions that were once considered fatal. For instance, early detection of and advances in the treatment of cancer and HIV have changed the course of these once “fatal” conditions, extending the lives of individuals with these diagnoses by years, if not decades.

Inconsistent Quality of Healthcare

The Agency for Healthcare Quality and Research report on healthcare quality and disparities (2015) found that in 2014 across all age groups and by a variety of measures, recommended care was delivered approximately 70% of the time.

Unfortunately, the results for individuals over the age of 50 are not as positive. Claxton and colleagues (2015) found that “only 42% of adults ages 50 and older received the recommended screening and preventive care in 2012, similar to rates in recent years.” The following figures indicate the percentage of times individuals in the study received the recommended healthcare for their condition:

- 68% for low back pain
- 68% for coronary artery disease
- 63% for congestive heart failure
- 58% for chronic obstructive pulmonary disease
- 57% for depression
- 53% for asthma
- 24% for atrial fibrillation
- 10% for alcohol dependence
(McGlynn, et al., 2003)
The study also demonstrated a wide variation in the quality of care based on the medical condition being treated. These findings indicate that there were many opportunities to improve healthcare quality and outcomes. Moreover, a 2014 report found that “the United States ranks last overall among 11 industrialized countries on measures of health system quality, efficiency, access to care, equity, and healthy lives” (Commonwealth Fund, 2014).

THE EMERGENCE OF DISEASE MANAGEMENT

The emergence of disease management was a continuation of the steps health plans had implemented to control the rising cost of healthcare services and to control access to care and expensive services and surgeries. These cost-controlling measures and controlling programs led to the development of managed care, utilization review, case management, and the chronic care model of health, which then served as a springboard to the creation of the disease management model.

Early Efforts to Control Healthcare Costs

Cost containment, access, and quality of care have always been a focus for the purchasers of healthcare insurance and services. As early as 1929 there were alternative healthcare arrangements created to meet the needs of rural workers in the lumber, mining, and railroad businesses. In the 1930s and 1940s, a few prepaid plans were established, with the following still in existence today:

- Group Health Association, organized in Washington, D.C., in 1937
- Health Insurance Plan of Greater New York, created in 1947
- Kaiser-Permanente Medical Program, created in 1942

These prepaid plans are considered a form of managed care and the precursor to health maintenance organizations (see below). In spite of these early efforts to address the needs of specific populations, healthcare costs continued to increase while accessibility and quality of care remained a primary concern (SSA, 1973).

MANAGED CARE

One of the earliest ways health plans attempted to control costs was through the development of managed care. Managed care organizations (MCOs) create networks of doctors and hospitals to decrease the cost of healthcare for their members by controlling access to care. Providers agree to a negotiated rate as “paid in full” for services members receive. All medical care in a managed care program must start with the primary care physician, who then determines if care is needed by a specialist and generates the necessary referral. This “gatekeeper” model was able to better control healthcare costs to some degree.
The term **health maintenance organization (HMO)** appeared in the 1970s and has been used interchangeably with **managed care**. HMOs are indeed similar to managed care, except that the provision of healthcare services is limited to the providers in the plan’s network. The federal Health Maintenance Act of 1973 required companies with 25 employees or more to offer HMO services. This law was viewed as the government’s effort to change healthcare delivery by providing an alternative to the traditional fee-for-service practice model utilizing group practice prepaid plans (SSA, 1973).

HMOs and MCOs had some success in decreasing healthcare costs, but the public was not receptive to this model of care because people felt providers were more interested in saving money than providing healthcare services. Even with the widespread adoption of managed care organizations, healthcare costs increased from 5.7% of the GDP (gross domestic product) in 1960 to 9.5% of the GDP in 1980.

Modifications were made to HMO and MCO processes to change the public’s perception, such as adjusting the way patients accessed specialists and making the referral process less cumbersome (Kaiser Family Foundation, 2012). Such networks remain in existence today but have generally shifted more costs to consumers through higher deductibles to more effectively manage costs.

**UTILIZATION REVIEW**

Managed care plans alone were not successful in reducing healthcare costs; therefore, health plans continued to search for additional ways to control healthcare costs, manage resources, and control risks in the application of healthcare services. Utilization review (UR) was developed to evaluate “the medical necessity, appropriateness, and efficiency of the use of healthcare services, procedures, and facilities under the provisions of the applicable health benefits plan using established clinical guidelines” (URAC, n.d.).

Utilization review can be completed prior to an event (prospective), during an unplanned event (concurrent), or after a hospitalization (retrospective). The use of UR has led to some members having negative impressions of health plans when they believe that a procedure should be covered but it is denied by the health plan. Utilization review is still in use today and is a very important means of ensuring care is both “medically necessary” and follows evidence-based guidelines.

**CASE MANAGEMENT**

Case management is defined as “a collaborative process that assesses, plans, implements, coordinates, monitors, and evaluates the options and services required to meet the client’s health and human service needs” (CCMC, 2014). The concept of case management did not originate with health plans, but it entered this arena primarily in the 1980s as a means to control costs, especially for members with high utilization of health services (“high-cost utilizers”) due to the complexity of their illness, such as an individual with diabetes experiencing frequent hospitalizations.
The population that benefits from case management includes those with chronic medical conditions and other serious, debilitating health conditions such as on-the-job injuries that can result in permanent disability. The philosophy behind case management is that “everyone benefits when clients reach their optimum level of wellness, self-management, and functional capability. This includes clients being served, the individual’s support systems, the healthcare delivery systems, and the various payer sources” (CCMC, 2014).

Case management has proven to be effective in reducing the costs of treating complicated medical conditions that may otherwise result in frequent emergency department treatments and hospital admissions. This practice identified the needs of the individual and provided specialized services to help them attain a higher level of health. Still used extensively today, case management has expanded in scope and depth to enlist community resources and support groups, obtain durable medical equipment, and activate behavior health benefits to better serve the needs of people with chronic medical conditions.

A Shift in Models of Care

Even with managed care, HMOs, utilization review, and case management programs in place, the costs of treating people with chronic medical conditions continued to rise, and the need for more effective ways to decrease healthcare costs became even more apparent. To effectively manage chronic conditions and control healthcare costs, a shift was necessary in the models that govern healthcare and chronic medical condition management.

In 2001, the Institute of Medicine (IOM) completed a report called “Crossing the Quality Chasm” that outlined the gaps in care within the current healthcare system and concluded that bringing “state-of-the-art care to all Americans in every community will require a fundamental, sweeping redesign of the entire health system.” In the report, the IOM published the following ten rules for system redesign to improve the U.S. healthcare system:

1. Care is based on continuous healing relationships.
2. Care is customized according to a patient’s needs and values.
3. The patient is the source of control.
4. Knowledge is shared and information flows freely.
5. Decision-making is evidence based.
6. Safety is a system priority.
7. Transparency is necessary.
8. Needs are anticipated.
9. Waste is continuously decreased.
10. Cooperation among clinicians is a priority.
ACUTE CARE MODEL (ACM)

Until the mid-1980s, healthcare was practiced based on the medical model, also known as the disease-based or acute care model of health. Under this model, the focus of healthcare services is to eliminate an acute illness or injury—a “fix the problem” approach to illness—rather than to resolve the factors that contribute to illness or chronic medical conditions. Providers are reactive, concerned primarily with processing patients through the healthcare system based on procedures and treatment plans rather than educating patients on steps they can take to enhance their health to prevent exacerbations of chronic medical conditions. The acute care model also takes a more prescriptive and directing approach to care, with little collaboration with the recipient of care.

Because patients are not taught to manage their chronic medical conditions, they often experience frequent emergency department and inpatient utilizations, more costly procedures, and referrals to specialty providers, all of which result in higher healthcare costs. In the ACM, providers practice in “silos” and do not readily share information about patient treatments with coordinating providers. This lack of provider collaboration also increases healthcare expenses due to duplication of services such as lab tests, radiology studies, and physician interventions.

Traditional, disease-based models of care find their strength in optimizing processes within the healthcare system but pay little attention to the role of patients in maintaining and managing their overall health. These models presume that the patient is willing to implement suggested solutions and will follow the recommended course of action. Green and colleagues (2002) captured the failings of the acute care model, including its disease-centered focus and minimizing the importance of the individual. They found that by changing the focus to include the patient’s experience, the provider could realize improved patient satisfaction and outcomes.

CHRONIC CARE MODEL (CCM)

In contrast to the ACM, the chronic care model of healthcare was developed at the beginning of the 21st century as a framework for a system to better address the unique needs of people with chronic medical conditions. The CCM is the foundation of the disease management model of healthcare. It is a consumer-centered, outcome-based approach to care using evidence-based medicine to reduce practice variation. It is a proactive approach that provides members the knowledge and skill to self-manage their chronic medical conditions from the physical, mental, emotional, and behavioral health perspectives.

The chronic care model of health is based on coordination between the community and the health system, including member self-management support, delivery system design, decision support, and clinical information systems (Fiandt, 2006). Due to this coordination, the focus of the entire system is the member instead of the systems, as with the acute care model of health (MacColl Center for Health Care Innovation, 2013).

- The community provides chronic care programs to fill gaps in patient knowledge and collaborates with other programs to avoid duplication of services. Sources of community support include church health ministries and senior centers.
• **Health systems** promote effective strategies to track and resolve treatment errors, continuously improve healthcare services and the quality of care, and coordinate patients’ care across the entire enterprise.

• **Self-management support** is based on the acknowledgment that the patient is at the center of managing his or her own health through effective self-management strategies. A key objective in self-management support is to increase the individual’s confidence (referred to as self-efficacy) so that they can self-manage their chronic medical conditions. Increasing self-efficacy is essential to making behavior changes that will have a measurable and positive impact on personal health.

  In many cases, people have little or no confidence in their ability to manage their health due to knowledge deficits and failings in their previous attempts to change or modify an at-risk behavior. One of the most important skills in disease management is to increase self-efficacy through positive reinforcement and teaching self-management skills. Without this confidence, long-term behavior change is not possible.

• **Delivery system design** focuses on the professional roles and the tasks completed in these roles, including evidence-based clinical practice guidelines and regular, planned care interventions. It ensures complex cases are supervised by case managers educated with chronic care management knowledge and skills.

• **Decision support** is based on a foundation of shared decision-making that is based on condition-specific, evidence-based clinical practice guidelines.

• **Clinical information systems** identify the populations at risk, monitor outcomes, provide reminders to patients for recommended care, and create a plan of care for each patient based on his or her needs, beliefs, and values.

(For a diagram of the chronic care model, see “Resources” at the end of this course.)

**CCM VERSUS ACM**

The CCM and the ACM have stark differences based on their focuses. The CCM results in improved health outcomes, empowered members, decreased healthcare costs, and healthier members. For example, participants in Stanford University’s Chronic Disease Self-Management Program demonstrated fewer hospitalizations as well as significant improvement in exercise, cognitive symptom management, communication with physicians, and self-reported health symptoms (Stanford University School of Medicine, 2008).

On the other hand, Wade and Halligan (2004) characterize the ACM as one that “sees the patient as a victim of circumstances in illness … a passive but cooperative recipient of treatment.” They conclude that this view of disease and the member’s role in maintaining health typically does not result in improved outcomes, does not empower the individual, increases healthcare costs, and results in individuals who are dissatisfied with the healthcare system and their overall care.
Comparing the ACM and CCM

<table>
<thead>
<tr>
<th>Acute Care Model</th>
<th>Chronic Care Model</th>
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<tbody>
<tr>
<td>Reactive to care</td>
<td>Proactive to care</td>
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<tr>
<td>“Fix it” focused</td>
<td>“Teach it” focused</td>
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<tr>
<td>Time limited</td>
<td>Time generous</td>
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<tr>
<td>Procedure based</td>
<td>Outcome based</td>
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<tr>
<td>Healthcare system focused</td>
<td>Patient focused</td>
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<tr>
<td>More variation in care</td>
<td>Less variation in care</td>
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<tr>
<td>Physician preference-based care</td>
<td>Evidence-based care</td>
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<tr>
<td>System experts</td>
<td>Patient experts</td>
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The Business Case

As employers, health plans, the federal government, and unions projected double-digit increases in healthcare costs throughout the end of the 20th century and into the 21st century, various interventions to control these costs were evaluated, such as the CCM, care management processes, and disease management (Luck, Parkerton, & Hagigi, 2007).

Disease management programs gained rapid and widespread adoption in the healthcare industry as a solution to the many problems affecting employers, health plans, federal and state governments, and union-run benefit programs: increasing healthcare costs, increasing numbers of individuals affected with chronic medical conditions, inconsistent quality of healthcare across the United States, and the management of individuals with chronic medical conditions.

Disease Management Programs Enter the Healthcare Space

Disease management programs were created in various healthcare settings, including pharmacy benefit managers, disease management organizations, health plans, local health clinics, health systems, and others. As the disease management model took shape, private disease management companies from outside traditional healthcare settings also entered this space, believing that large profits could be made from generating savings in healthcare cost for their clients.

The initial success of disease management programs together with the ongoing need for both health plans and employers to reduce healthcare costs has led to the growth and expansion of such programs.

Employer-Based Programs

As part of an aggressive response to healthcare cost increases, employers began to implement disease management programs to assist in managing health issues of employees with chronic
medical conditions. Employers hired nurses and other healthcare professionals to provide on-site education to employees in the form of disease management and wellness programs. This was seen as a direct means to lower healthcare costs, improve the health of their employees, decrease sick days, and even retain employees.

**HEALTH PLAN PROGRAMS**

Health insurers faced many challenges, with healthcare costs skyrocketing, the costs of managing chronic conditions increasing, and more people becoming at-risk for developing chronic diseases. Health plans began to utilize case managers, viewing managed care and utilization review practices as ways to decrease the cost of care for the insured.

Likewise, disease management programs were implemented as another way to control rising costs. These programs were referred to as “telephonic disease management programs” due to the program design of contacting each individual by phone. This practice remains in use today, as it is the most cost-effective way to manage large numbers of members in a nationally based health plan. All health plans now offer some form of disease management as a benefit for their members.

**The Value Proposition for Disease Management**

Establishing the business case for a disease management program is essential because “policy makers and managers within healthcare systems want to know which specific interventions or tools can control costs for care of patients with complex conditions while maintaining or improving the quality of care and patient outcomes” (Luck, Parkerton, & Hagigi, 2007).

Determining the business case for a program or service is assessed by the value that a program can provide for the purchasers of the program, referred to as the “value proposition.” It is the purchaser’s evaluation of the proposed worth of the program. A value proposition is established by analyzing the results of a program’s performance and the probability that similar results are likely to occur in the future if the same methods and processes are applied.

In the case of disease management programs, the recommended value proposition is to decrease healthcare costs by applying evidence-based guidelines (also called “standards of care”) to the management of all members across the population, especially those living with chronic medical conditions. The proposed result is a decrease in inappropriate utilization of healthcare resources, primarily expensive emergency department visits and avoidable hospitalizations for preventable complications resulting from uncontrolled and mismanaged chronic medical conditions.

Traditionally, disease management programs are evaluated on their value proposition with regards to financial value, clinical value, and satisfaction value. As disease management programs have evolved, other factors important to employers who purchase the programs have been added to demonstrate additional value provided by the programs.
As members’ health improves, employers can expect to see a decrease in absences of employees for health reasons as well as fewer employees who attend work while ill (known as “presenteeism”) and therefore not able to perform their job duties at an appropriate level. This added value results in lower costs to employers through fewer employees requesting paid time away from work due to illness, lower related costs to backfill positions with temporary employees, and increased productivity of employees at work.

**CLINICAL VALUE**

Disease management programs are evaluated on their clinical value as measured by improvement in clinical outcomes. Disease management programs provide their value by applying evidence-based clinical guidelines to decrease the variation in condition management across a population such as health plan members with chronic medical conditions.

An example of clinical value is the increase in the overall number of members with heart failure who are prescribed and use a diuretic (Lasix) to manage their fluid status. This drug is known to prevent exacerbations of heart failure, thereby reducing the number of emergency department visits and inpatient utilizations. Due to the frequent occurrence in heart failure patients across the United States, this disease management intervention decreases the cost of healthcare.

**HEDIS Ratings**

Assessing disease management programs accurately requires a consistent, reproducible, and reliable means of measuring and targeting a population’s improvement in clinical outcomes. One of the most widely used and recognized quality standards used by disease management programs is the Healthcare Effectiveness Data and Information Set (HEDIS) (NCQA, n.d.).

HEDIS ratings are important because they allow a purchaser to compare health plans for their employees. Disease management providers design their programs, assessments, and interventions to increase or improve the clinical parameters of HEDIS scores to support their value proposition. *(See also “Resources” at the end of this course.)*

**NCQA Performance Measures**

National Committee for Quality Assurance (NCQA) specifications address standardized performance measures (applied as standards of care by disease managers) that cover dimensions of care for people with asthma, diabetes, chronic obstructive pulmonary disease (COPD), heart failure, and ischemic vascular disease, as well as tobacco use, influenza vaccination, and pneumococcal vaccination. These are the leading chronic medical conditions and risk factors that contribute to the majority of all healthcare costs today.
### NCQA STANDARDS OF CARE

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<thead>
<tr>
<th>Chronic Condition</th>
<th>Standards</th>
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<tbody>
<tr>
<td><strong>COPD</strong></td>
<td>• Influenza vaccination</td>
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<td>• Pneumococcal vaccination</td>
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<td></td>
<td>• Assessment of tobacco use</td>
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<td>• Assistance with tobacco cessation</td>
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<tr>
<td><strong>Asthma</strong></td>
<td>• Appropriate medication use</td>
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<td>• Influenza vaccination</td>
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<td>• Pneumococcal vaccination</td>
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<td>• Assistance with tobacco cessation</td>
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<tr>
<td><strong>Ischemic Vascular Disease</strong></td>
<td>• LDL-C screening</td>
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<td>• LDL-C control</td>
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<td>• Aspirin or other antithrombotic use</td>
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<td>• Presence of beta-blocker treatment after a heart attack</td>
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<td>• Influenza vaccination</td>
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<td>• Pneumococcal vaccination</td>
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<td>• Assessment of tobacco use</td>
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<td></td>
<td>• Assistance with tobacco cessation</td>
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<tr>
<td><strong>Diabetes</strong></td>
<td>• Hemoglobin A1C (HbA1C) testing quarterly</td>
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<td></td>
<td>• LDL-C screening</td>
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<td>• LDL-C control (&lt;100 mg/dL)</td>
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<td></td>
<td>• HbA1C control (&lt;7.0%)</td>
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<td>• Medical attention for nephropathy</td>
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<td>• Eye exam</td>
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<td>• Influenza vaccination</td>
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Source: NCQA, 2013.
FINANCIAL VALUE

Disease management programs commonly measure the financial value for the program based on return on investment (ROI). ROI measures the cost of program start up and program maintenance over a period of time (typically annually) compared to the savings realized from avoidable costs delivered from the program.

The business case for a program or service can be positive or negative. A positive result occurs when the financial benefits exceed the fees or expenditures to create and preserve the program or service while maintaining or improving quality of healthcare. A program is successful when it is able to reach a positive ROI, expressed as a ratio. For example, 3:1 return on investment means the disease management program saved $3 dollars for every $1 dollar spent on the program.

At the onset of implementation of disease management programs, ROI was a primary reason to justify the business case to financial officers and was rigorously followed on a quarterly and annual basis. Today, disease management programs rely more on trends in costs as well as ROI to establish program success and to improve program design models to fairly evaluate these trends.

SATISFACTION VALUE

Disease management programs project their value to improve the overall satisfaction of members by providing individualized care that addresses what is most important to a member’s physical and emotional health. Lack of individualized care (i.e., the clinician lacking time to attend to questions and provide explanations to patients concerning the self-monitoring and self-management of their chronic medical conditions) is a primary complaint within the healthcare system. Thus, by making members the focus of each disease management intervention, their satisfaction with their healthcare and health plan can increase.

Contact with members contains essential elements for demonstrating the program’s value. Elements designed to enhance the member’s satisfaction with their health outcomes and, subsequently, their satisfaction with the program include:

- Obtaining complete assessment data, including diagnosis
- Determining factors contributing to gaps in care and gaps in self-management knowledge
- Developing a member-centric plan to address care needs
- Implementing and evaluating effectiveness of the individualized plan of care

At the end of program participation, members receive an opportunity to elaborate on their satisfaction through completing a formal survey of the program.
THE DISEASE MANAGEMENT PROCESS

To understand the disease management process, it is important to understand its position in the Illness-Wellness Continuum (see figure below) as well as how it has matured since its adoption to now provide its value proposition across the continuum. Its expansion is based on the success of the disease management model in changing the lifestyles and behaviors of members with chronic medical conditions and therefore decreasing the cost of care for conditions like heart failure, diabetes, and COPD.

Disease Management and Wellness

Disease management is positioned to align itself with the Institute of Medicine’s vision for the future of healthcare. This vision is focused on wellness and disease prevention throughout the lifespan of an individual. The term wellness is often used interchangeably with the term health and was first defined by the World Health Organization (1948) as “the state of complete medical and social well-being, not merely the absence of disease or infirmity.”

The healthcare field is quickly moving to a similarly broad concept of health that includes the impact of environmental, social, spiritual, and intellectual components. Individuals must have balance in each of these dimensions of wellness in order to be considered “healthy.” But health is not an absolute state reserved only for those who have balance in all dimensions of wellness; rather, it exists along a continuum between premature death and high-level wellness.

LEVELS OF PREVENTING ILLNESS

According to Neuman’s Systems Theory of Wellness, prevention of illness can occur at one of three levels:

- Primary prevention entails interventions put into place before illness occurs.
- Secondary prevention occurs in and immediately after an illness.
- Tertiary prevention is aimed at rehabilitation following an illness.
Wellness programs are widely used as primary prevention by small, medium, and large companies as part of an employee benefit package. They provide their value proposition to employers by assisting employees to adopt healthy lifestyles that can prevent (or prolong) the development chronic medical conditions. These programs may include onsite workout facilities as well as interventions such as blood pressure screenings, biometric testing for lipid panels or fasting blood sugars, weight loss, flexibility, stress management, and more. Complex care is aimed at secondary prevention, providing interventions to help individuals restore their health after acute medical or traumatic events, and may also overlap into tertiary prevention. The goal is to guide members back to their previous level of health, for instance, following an uncomplicated hip replacement or acute illness such as pneumonia. Such care is not limited to those with a long history of chronic medical conditions.

Case management provides interventions at the tertiary level, focused on the sickest population of members who are considered high risk and high cost for all health plans. Case managers provide clinical care similar to disease managers and also coordinate resources in the transition from a hospital admission to a rehab facility or skilled nursing facility when a member is not able to return home. Interventions can require daily contact with members and calls to primary care providers, hospital care personnel, social workers, and others to ensure a smooth transition of care for each member. The intervention period can take place over several weeks to months or more of intensive interaction by various healthcare professionals.

Disease management offers its interventions at the primary, secondary, and tertiary prevention levels as a means of aiding individuals experiencing chronic health conditions to optimize their experience of health, wherever it occurs along the wellness continuum. It includes prevention practices such as ensuring members take low-dose aspirin to decrease their risk of cardiovascular disease or promoting immunizations against influenza or pneumonia. The intervention period is typically one year, with the primary objective of ensuring each member is aware of their condition-specific standards of care, is receiving these standards of care by their primary care provider, and understands the self-management practices they can implement to avoid visits to the emergency department or avoidable admissions.

It is important to note that there are not definitive lines of separation between disease management, wellness programs, complex care, and case management. This can sometimes create an overlap in interventions and lead to duplication of services between onsite programs, health plans, and health providers.


Disease Management Objectives

The primary objective of all disease management programs is consistent with the chronic care model of health: to assist health plan members gain the knowledge and learn the skills necessary to practice self-management and prevent condition exacerbation.
SUPPORTING THE PLAN OF CARE

One objective of disease management is to ensure the member’s adherence to the physician/healthcare provider plan of care. The disease management professional does this through collaboration with the member’s primary care provider to understand the treatment plan and ensure the plan is consistent with evidence-based standards for the management of the member’s chronic conditions.

Collaboration can take the form of written or verbal outreach to the provider at program initiation and at regular intervals throughout the member’s participation in the disease management program. Physicians and other care providers are advised of the member’s program goals, progress, and completion of the disease management program.

The disease management team may also serve as an advocate for the physician-member relationship by immediately contacting the provider when unsafe or dangerous actions are noted during the disease management process. For example, the disease manager may take action in the case of serious side effects from medications, such as a heart rate below 60 bpm with dizziness in an individual taking a beta blocker or the use of two fast-acting inhalers by an individual with COPD.

PREVENTING EXACERBATIONS / COMPLICATIONS

Another objective of the disease management program is to prevent exacerbations and complications associated with a member’s chronic condition. Using behavior change techniques (based on motivational interviewing and stages of change), the disease management professional assesses members’ knowledge of their chronic medical conditions and past experiences with managing their conditions. Doing so promotes members’ competency and self-efficacy to capture their past successes, challenges, and ability to manage their condition.

Education then builds on members’ current knowledge and dispels myths and actions that no longer adhere to current, evidence-based guidelines. Disease management professionals are able to empower members to make positive lifestyle changes, self-manage their conditions, and understand when to call their provider to gain further control of their chronic medical condition.

IMPROVING OVERALL HEALTH

The greatest value of the disease management model in the eyes of members may lie in helping them achieve improved health outcomes. As members are better able to manage their chronic condition, they are able to realize the results of their hard work, as evidenced by positive changes in their quality of life. These changes can range from elevated mood to increasing walking distance without fatigue to decreasing the number of sick days away from work.

Improved quality of life can also be correlated with members’ satisfaction in the disease management program and decreased health costs for members, employers who sponsor the program, and health plans that provide the program.
Identification of At-Risk Members

The success of all disease management programs depends on the accurate identification of health plan members who can benefit from program participation. This takes place through the proactive identification of at-risk members by collecting data from a variety of medical and non-medical sources, including:

- Comprehensive health risk assessments (HRAs)
- Medical and pharmacy claims
- Health records
- Health plan employer data
  (Academy of Managed Care Pharmacy, 2014)

From this data, members are identified as candidates for participation in the disease management program.

RISK STRATIFICATION

Once a member is identified for a disease management program, the member’s clinical and claims data is processed through sophisticated (and usually proprietary) algorithms used to determine the need for disease management services. This process is called risk stratification. Risk stratification is based on specific program business rules that assign identified members into groups or tiers based on their current level of health and need for program interventions. Risk stratification is a dynamic process, as members can move from a lower to higher level of risk with the occurrence of a hospitalization or diagnosis of a new medical condition.

Low-tier participants consist of healthy members who may benefit from health promotion and preventative services such as a wellness program, whereas high-tier participants require the highest level of care and frequent interactions from disease management professionals. Risk stratification occurs at the onset of program participation and as new data is received from claims and pharmacy transactions. Based on historical claims data, risk stratification aligns care to assist members to regain their highest level of health (Gordon & Bitton, 2013).

PREDICTIVE MODELING

Disease management programs use predictive modeling as a means of forecasting costs and utilization of healthcare services based on historical claims data. In disease management, “predictive models can help to improve staff efficiency, reduce administrative costs, focus patient counseling and education efforts, and improve financial and health outcomes” (Cousins et al., 2002).

Predictive modeling programs also utilize sophisticated mathematical formulas (algorithms) based on statistical relationships among identified data elements to make future predictions or forecasts about the likelihood to require healthcare resources. Disease management programs can
create their own proprietary predictive modeling systems that can provide a competitive advantage to anticipate healthcare costs for their clients and create a risk-reduction plan based on the disease management process.

**GAPS IN CARE**

The disease management model attempts to identify and fill “gaps in care” and/or “gaps in condition self-management.” A gap in care is defined as “a disparity between recommended best practices and the care that’s actually provided” or “a disparity between healthcare needs and healthcare services” (PBARx, 2013; Medical Dictionary, 2009).

Gaps in care occur when members do not adhere to generally accepted, evidence-based standards of care for the management of their chronic health condition. Nonadherence is a complicated issue; it can occur because of a number of intervening factors such as lack of financial, transportation, and support resources. It is the role of the disease manager to determine the factors affecting nonadherence and connect members with appropriate resources to meet their needs and bring them into compliance.

Examples in care gaps include:

- Improper preventative screenings and immunizations
- Improper medication reconciliation on discharge from an acute-care setting
- Not understanding a physician’s plan of care
- Lack of medication compliance
- Not understanding self-management practices

Each of these gaps has the potential to increase the likelihood of disease exacerbation, increased healthcare costs due to increased utilization, and a decline in overall health outcomes.

**Individualized Plan of Care**

Members are identified for disease management program participation and then stratified/grouped based on their medical conditions and current acuity level. Those who agree to participate in the disease management program next complete an in-depth, condition specific assessment to identify any gaps in care and their knowledge of condition self-management. Based on identified gaps and condition knowledge, an individualized plan of care is created in collaboration between disease management professionals and the program participants.
HEALTH ASSESSMENT

The “art” of disease management lies in the ability of a disease manager, primarily a nurse, to quickly and appropriately assess the needs of each member and apply clinical knowledge to identify the most critical gaps that place that individual’s health in jeopardy.

Health assessments (HAs) are the primary tool used to obtain a thorough assessment of each individual participating in a disease management program. HAs are administered electronically over the Internet, by Interactive Voice Response telephony systems, and by nurses or other health professionals over the phone and via paper-based forms.

Data collected in the HA include the individual’s:

- Current health habits or lifestyle practices
- Knowledge and practice of condition-specific standards of care
- Medication regimen
- Nonadherence to standards of care
- Emotional health status

Information is collected during initial contact with the member and continues throughout the duration of his or her program participation. Such ongoing assessment enables the disease manager to obtain a more complete picture of the evolving level of health of each program participant and his or her risk.

Based on the identified issues and needs of the member, the disease manager collaborates with the member to develop a member-centric plan of care. Those issues that the member is both willing and able to discuss are prioritized, according to importance to the member, focusing on education around symptom management and disease self-monitoring. As with the member-centric plan of care, the disease manager determines the timeframe for follow-up based on the severity of the member’s needs.

STANDARDS OF CARE

Disease management programs utilize evidence-based medicine (EBM) in the design of each plan of care. EBM, also referred to as standards of care, provides the foundation of disease management interventions. The application of standards of care is intended to decrease the variation in care of patients with chronic medical conditions and improve clinical outcomes—the value proposition for DM.

There are numerous standards of care that are included in an individualized plan of care. For example, the table below describes the standards of care for a person with heart failure.
<table>
<thead>
<tr>
<th>Test and Rationale</th>
<th>Frequency</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure: Decrease strain on the heart, kidneys, and brain</td>
<td>Weekly</td>
<td>Recommended &lt;130/80</td>
</tr>
<tr>
<td>Aspirin: Mild blood thinner to prevent clots</td>
<td>Daily</td>
<td>81 mg</td>
</tr>
<tr>
<td>Diuretics: Decrease excess water and decrease cardiac work load</td>
<td>Daily or prn</td>
<td>Based on medication</td>
</tr>
<tr>
<td>Fasting lipid panel: Assess risk of blood vessel blockage</td>
<td>Annually</td>
<td>Cholesterol &lt;200</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Triglycerides &lt;150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HDL &gt;40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LDL &lt;100</td>
</tr>
<tr>
<td>Physical exam: Assess physical changes such as weight, signs of HF progression</td>
<td>Annually</td>
<td>Body systems are within normal limits</td>
</tr>
<tr>
<td>EKG: Assess for changes in cardiac rhythm from previous EKG</td>
<td>Annually or with symptoms</td>
<td>Normal sinus rhythm</td>
</tr>
<tr>
<td>Echocardiogram: Assess for changes in cardiac function from previous testing</td>
<td>Annually or with symptoms</td>
<td>Ejection fraction (EF) &gt;50</td>
</tr>
<tr>
<td>Weight: Assess for changes attributed to fluid retention that can place stress on the heart</td>
<td>Daily</td>
<td>BMI &gt;17.5 and &lt;24.9</td>
</tr>
<tr>
<td>Medication review: Assess for function, side effects, dosage, and adherence</td>
<td>Annually and with each visit</td>
<td>All medications are required, correct dosage, and minimal or no side effects</td>
</tr>
<tr>
<td>Low sodium diet: Sodium leads to fluid retention and increased cardiac strain</td>
<td>Daily</td>
<td>&lt;2 g or 2,000 mg or 1 tsp</td>
</tr>
<tr>
<td>Angiotensin converting enzyme/angiotensinogen blocker: Lower blood pressure and decrease cardiac stress</td>
<td>Daily</td>
<td>Based on medication</td>
</tr>
</tbody>
</table>


EVIDENCE-BASED MEDICINE

Evidence-based medicine (EBM) is defined as “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research” (Sackett et al., 1996).

EBM derives from research in controlled situations that, when implemented consistently, have demonstrated positive outcomes. It may also come from practice-based evidence. (Different
from EBM, practice-based medicine moves beyond anecdotal practice by repeating conditions and implementing practices shown to demonstrate positive results to determine if the same result is achieved.)

Primary source data is the strongest source of evidence available. These include primary studies such as clinical trials and multi-center studies as well as primary source data from databases such as AHRQ and Cochrane. Secondary source evidence includes studies that have been reviewed by experts in the field and determined to be clinically relevant. Systematic reviews and meta-analysis studies are considered sources of secondary evidence.

There are many sources of EBM for the most common chronic medical conditions, such as diabetes, heart disease, and COPD. Some of the leading organizations that provide insight into the management of chronic conditions include the American College of Cardiology, American Diabetes Association, American Heart Association, National Guideline Clearinghouse, National Institutes of Health, and the Institute of Medicine, to name a few.

SELF-MANAGEMENT EDUCATION

The disease manager focuses on educating a member on managing his or her condition. Self-management education encompasses teaching the member the standards of care, outlining the knowledge needed to assess daily symptoms that can indicate changes in health, and altering daily practices to maintain or restore optimal health.

Most everyone can learn and practice daily self-management. This might include such actions as monitoring blood sugar levels or blood pressure as well as understanding the results of those self-monitoring tests. Or, to adequately manage heart failure, a member will need to know how to recognize the signs/symptoms of disease exacerbation, such as increased dyspnea and/or orthopnea, weight gain greater than two pounds in one day or five pounds in one week, and edema in the lower extremity and/or abdomen (AHA, 2015). Members with heart failure should also be taught to limit salt and fluid intake and monitor and record their weight at the same time every day.

BEHAVIOR CHANGE

Early disease management programs often employed a “tell you what to do” method of education, which generally did not result in lasting changes in behavior or improved outcomes. Additionally, creating self-improvement goals when members were not ready only led to frustrating individual interactions. Thus, disease management professionals began to adopt proven behavior change strategies borrowed from the field of addiction management. These strategies were based on guiding people to make lifestyle changes according to their own reasons to change, not simply because they were told to do so.

In disease management, there are several behavior change models in use. The two most common are the stages of change and motivational interviewing.
Stages of Change Model

The Stages of Change (also called Transtheoretical) Model of change is a widely used behavior change model among disease management professionals. According to its founder, Dr. James Prochaska (1997), “change is a process, not a one-time event.” The model assumes patients are not ready to change an unhealthy lifestyle simply because it is good for them.

The model assesses each patient’s “readiness to change” based on characteristics for each stage on the continuum of change. The disease manager determines where each member is along the continuum and then utilizes different strategies to guide the member along the continuum to change a behavior.

The Stages of Change Model describes five phases of behavior change at which a member can be for any unhealthy habit (Norcross, Krebs, & Prochaska, 2011). The model also includes specific strategies in moving a person from one phase to the next. In disease management programs, the goal is to guide each individual from a low level of change (i.e., not even thinking about changing an unhealthy habit) to the next phase until they reach the maintenance phase. This progression can lead to behavior change and a higher level of health.

1. **Pre-contemplation**: Characterized by an unawareness that one’s health is at risk from an unhealthy lifestyle

2. **Contemplation**: Characterized by a willingness to be made aware of a health risk but not ready to make a change in one’s current lifestyle (motivational interviewing is used extensively in this phase, see below)

3. **Preparation**: Characterized by taking steps (such as creating a change plan or goal) to replace an unhealthy habit with a healthy habit

4. **Action**: Characterized by adhering to a new healthy habit for less than six months

5. **Maintenance**: Characterized by practicing a healthy habit for more than six months

The five phases of change as described in the Stages of Change Model. (Source: Authors.)
Motivational Interviewing

Motivational interviewing (MI) is a gentle form of counseling “that assists patients in exploring their reasons to change and the ambivalence that is a normal response to change” (Rollnick et al., 2008). MI has been used extensively to assist people with drug addictions and alcohol abuse to escape those lifestyles. Early studies showed MI could also be effective with people with chronic medical conditions, and as a result, the use of MI grew rapidly within the disease management industry.

The MI technique includes developing a collaborative relationship with each person; evoking that person’s reasons to change unhealthy behaviors based on his or her values, beliefs, and goals; and accepting that person’s individual autonomy (Rollnick et al., 2008). It takes into consideration the member’s knowledge of and past experience with their condition(s) and uses it to frame conversations about change.

For example, asking the member who verbalizes a desire to lose twenty pounds, “How would your life be different if you were to lose twenty pounds?” or “What have you tried in the past to lose weight?” can help that member envision how making health changes might impact his or her life and tie former successes into the plan for change.

The desired outcome of MI-based conversations is to increase the individual’s ability to identify and verbalize reasons to change a negative behavior.

Program Evaluation and Measurement

In response to the need to evaluate disease management programs on behalf of purchasers, program guidelines were developed by the Population Health Alliance (formerly Care Continuum Alliance) to ensure DM programs met their goal of improved outcomes and healthcare cost savings. In addition, accreditation processes were developed by the National Committee for Quality Assurance and Utilization Review Accreditation Commission to ensure industry standards were in place for all disease management providers.

Program evaluation typically occurs in the areas of structural measures, process measures, and outcome measures.

- **Structural measures** are used to create the program and include operational rules; the staffing model used to meet individual needs; the information systems utilized to collect, access, and manage individual data from all resources; and even quality measures to improve program performance.

- **Process measures** outline the services delivered, such as condition-specific standards of care.

- **Outcome measures** report on the results of the program in meeting its intended purpose. Although there are numerous outcomes measured, clinical and financial measures are the major areas of concern for program purchasers.
Clinical effectiveness measures the short- and long-term improvements in practicing the standards of care, such as the percentage of individuals with heart failure using a diuretic, post-MI patients using a beta blocker, or people with diabetes who lower their A1C level.

Utilization measures the impact of health service utilization such as emergency department visits, hospitalizations, and prescribed medications.

Financial measures are determined by measuring the cost savings attributed to the DM intervention and referred to as return on investment (ROI). ROI is measured as the cost savings realized though participation in the disease management program minus the cost incurred to administer the program.

Humanistic measures assess patient satisfaction based on HEDIS measurements, individual capabilities to perform activities of daily living (ADLs), satisfaction of providers, functionality, and quality of adjusted life years (QALY).

Indirect measures are based on productivity measures such as increased worker productivity, presenteeism, and decreased sick time.

Intangible measures are not typically measured by a program but can have an effect on program success, such as physician retention.

(Cousins et al., 2007)

Reporting and Feedback

Disease management purchasers rely on regular reporting to monitor the effectiveness of the program in meeting program and contractual parameters. Reporting provides information such as the numbers of:

- Members actively participating in the program and contacted each month
- Interventions completed
- Labs captured
- Goals created and completed
- Standards of care practiced

The compounded effect of these practices leads to improved outcomes, a decrease in healthcare costs, and a higher satisfaction level for the individual population and providers.

A TEAM APPROACH

Traditional healthcare models often involve physicians practicing in a “silo” with minimal sharing of information and result in patients feeling disconnected from each service provider. Instead, disease management programs utilize a collaborative model and a team approach—adopted from the chronic care model of health—to assist patients in the management of chronic
medical conditions. The member is considered a vital member of the team, and the team typically includes several professionals:

- Medical director
- Registered nurse
- Pharmacist
- Registered dietitian
- Social worker
- Behavior health counselor
- Certified Diabetes Educator (CDE) (in some cases)

In this collaborative model, all healthcare professionals focus their attention on the needs of the member, with the goal of meeting those needs. Members benefit from continuity of care among all professionals, which can result in improved outcomes, decreased healthcare costs, and a more satisfied healthcare consumer.

**Medical Director**

The medical director does not oversee individual member management. Rather, he or she oversees program administration and is available for consultation on an as-needed basis. The role of the medical director is to ensure the following:

- The disease management program meets its intended purpose.
- The care provided reflects current, evidence-based interventions for each medical condition.
- All staff members provide this level of care on each member interaction.
- The program meets federal, state, and local standards of regulation.

The medical director can also be consulted on unique cases that require a physician’s guidance.

**Registered Nurse**

Registered nurses are the primary point of contact for each member. The primary objectives for a disease management nurse are to ensure each member is taught:

- Standards of care for the management of their condition
- How to recognize, treat, and prevent symptoms
- How to self-manage their condition to enhance their quality of life

The nurse serves as a representative of the health plan, employer, or health system. Although the role description and tasks required may vary depending on the employer, nurses working within
the disease management process have some consistent functions, including completing health assessments, educating patients on their primary care provider’s plan of care and medication regimen, and management of chronic medical conditions.

Similar to the nursing process, the nurse’s initial interaction with the member includes a thorough assessment of the member’s health. In addition to taking a medical history, the nurse collects clinical information such as blood pressure, smoking status, and lab results that may indicate health status.

Employing critical thinking and motivational interviewing skills, the nurse then analyzes assessment information to determine the most relevant health concerns for each member, to uncover gaps in the member’s care, and to evaluate the member’s understanding of his or her medical condition(s) and self-management practices. (See also “Gaps in Care” earlier in this course.)

Gaps in care become the basis of the nursing diagnosis and form the foundation of the plan of care. Consistent with disease management principles, the plan of care is developed in collaboration with the member and his or her primary care provider’s medical plan of care. Implementing the plan of care involves the disease management nurse and other healthcare team members, who use their knowledge of the stages of change and motivational interviewing to coach and educate the member with the aim of successfully achieving each member’s plan of care and self-management practices.

CASE (continued)

DISEASE MANAGEMENT NURSE

Following Mr. Smith’s discharge for exacerbation of his heart failure, he was contacted by his health plan’s disease management nurse, Sharon. On this first call (the “engagement” call), Sharon greeted Mr. Smith in a professional manner, introduced the program, and asked if she could speak with him for about 10 minutes about how he could avoid future hospitalizations. Mr. Smith agreed, telling Sharon that he never knew his health plan provided a benefit to help him better understand and manage his chronic medical condition.

Sharon explained how the disease management program involves a nurse and a team of specially trained healthcare professionals to help him better self-manage his health. Using motivational interviewing skills, Sharon completed an extensive health assessment with Mr. Smith to assess his current level of health, understanding of heart failure, adherence with the standards of care, and understanding on how to assess his daily health. She also asked Mr. Smith what was most important to him, to which he replied, “To avoid any more trips to the emergency department in the back of an ambulance.”

Sharon learned that Mr. Smith did not really understand what heart failure is, how it affects his health, or what he could do to self-manage his symptoms as they develop. Sharon assisted Mr. Smith by providing information on his chronic medical condition and how to manage symptoms that typically occur with heart failure. She also offered a referral to the pharmacist to
discuss Mr. Smith’s medications and a consultation with the dietitian to discuss diet changes to support management of heart failure.

(continues)

**Pharmacist**

The registered pharmacist (RPh) assesses the current medication regimen of each member to ensure they are taking the medications prescribed for their chronic medical conditions based on evidence-based medicine. The pharmacist also supports members with medication adherence by offering education on the actions, side effects, and special information considerations for each medication.

In some cases, the pharmacist may be able to connect members who cannot afford their prescription medications to prescription drug copay assistance programs administered by drug manufacturers, private foundations, and state and local entities.

Finally, while working with the member, the pharmacist may identify issues of therapeutic duplication or drug interactions that increase the member’s risk for readmission. In this circumstance, the pharmacist may consult with the member’s primary care provider to ensure safe medication administration and recommend a regimen that adheres to evidence-based guidelines.

**CASE (continued)**

**PHARMACIST**

Greg, the team pharmacist, made a call to Mr. Smith later that week. During the conversation, Greg determined that Mr. Smith does not understand the importance of taking his medications. Mr. Smith told Greg that his medications “are very expensive” and that with his wife’s medication costs, he sometimes cannot afford to buy his own.

Greg provided education on the use, side effects, and potential risks for each of Mr. Smith’s prescribed and OTC medications. In addition, Greg provided information on prescription drug assistance programs in which Mr. Smith may be eligible to participate. Greg also contacted the disease management nurse, Sharon, to share the financial concerns Mr. Smith expressed during his consultation.

(continues)

**Dietitian**

The registered dietitian (RD) assesses the current nutritional status of the member to determine if there are any deficiencies. The RD offers assistance in educating the member on current dietary recommendations and how he or she can benefit from implementing any dietary changes to better manage his or her chronic medical conditions and improve their overall health status.
CASE (continued)

DIETITIAN
Shelly, the registered dietitian for the disease management team, contacted Mr. Smith to assess his nutrition needs. During the conversation she learned that Mr. Smith was prescribed a low-sodium diet by his primary care provider but that he does not understand the restrictions or impact of nonadherence to the restrictions. Shelly finds, through motivational interviewing, that Mr. Smith eats a lot of canned and processed foods because “I eat what I can afford, even if it is not the best for me.”

During her first interaction, Shelly decides on the period of time she will work with Mr. Smith to resolve his education needs and develop a dietary plan that will fit his lifestyle. Shelly also contacts Mr. Smith’s nurse, Sharon, to share the dietary concerns expressed by Mr. Smith. (continues)

Social Worker
When members do not know how to navigate the healthcare system, do not understand their health benefits, or may benefit from community resources, they may need the assistance of a social worker. The social worker can assess the current resources available beyond the health plan to help members manage their chronic medical conditions. The social worker helps the individual locate resources from federal, state, and/or local sources such as:

- Obtaining durable medical equipment such as a blood pressure cuff
- Securing transportation to and from medical treatments
- Receiving assistance that may allow them to remain at home for a longer period of time

In addition to connecting members to such resources, the social worker assists the member with emotional/social issues that may be adversely affecting the member’s ability to achieve health goals. For example, the social worker may recommend Alcoholics Anonymous to a member who wishes to stop drinking or Gilda’s Club for a member with a new diagnosis of cancer.

CASE (continued)

SOCIAL WORKER
Shayne, the social worker, reached out to Mr. Smith in response to a call from Sharon, Mr. Smith’s disease management nurse. Shayne asked Mr. Smith about his financial concerns. During the conversation, he discovered that Mr. Smith does not regularly fill his prescriptions because of financial difficulties. He also learned that Mr. Smith received a disconnection notice for his electricity yesterday. The difficulty of his wife’s illness and his own frequent disease exacerbations are big sources of stress for Mr. Smith.

Shayne provided information on community resources that can assist with utility costs and offered to set up a behavioral health consultation to help Mr. Smith develop a plan of care around stress management. Mr. Smith gladly agreed to take advantage of these resources. (continues)
Behavioral Health Counselor

Behavioral health is a very important aspect of everyone’s well-being and in many cases complicates the health of those with chronic medical conditions. Studies have shown that depression occurs in higher proportions of people with chronic medical conditions, and unless depression is first assessed and diagnosed, the primary health problem will not be effectively managed (Kanton, 2011).

Behavioral health counselors provide emotional support as part of the disease management approach to address the whole person, not just the condition. This role is typically performed by licensed clinical social workers, clinical psychologists, and licensed psychologists.

CASE  (continued)

BEHAVIORAL HEALTH COUNSELOR

Dorothy, the behavioral health counselor, obtained Mr. Smith’s permission to engage him in behavioral health counseling. He agreed, disclosing that he felt overwhelmed because of his heart failure and the financial difficulties caused by his recent hospital visits. He also described feeling financially responsible for his wife, who has disabilities of her own. Missing so much work due to illness has put a strain on their relationship, and he doesn’t know where to turn for support. The prospect of financial help with his utility bills and his prescriptions has relieved some of his concerns, but he feels down about his illness and doesn’t know if he has the ability to fully manage his condition without help.

Using motivational interviewing techniques, Dorothy begins her emotional health assessment. She first determines his mental status and then works to help Mr. Smith realize his strengths and capability to manage his condition. She helps Mr. Smith identify strategies he can put into place to manage the helplessness and lack of control he feels about his health concerns. Mr. Smith verbalizes his desire to continue to work with Dorothy so he can take control of his thoughts and feelings, with the end result of improving his outlook and overall emotional health.

(continues)

Certified Diabetes Educator

According to the National Certification Board for Diabetes Educators (n.d.), a “Certified Diabetes Educator (CDE) is a health professional who possesses comprehensive knowledge of and experience in diabetes management, pre-diabetes, and diabetes prevention.” Primary tasks of the CDE are to provide education and support, teach self-management skills, and optimize overall health through behavior change for individuals with diabetes.

CDEs pass a comprehensive national certification exam to ensure they possess the knowledge and skills in the application of diabetes self-management education (DSME). CDEs have a greater depth of knowledge of diabetes regarding blood sugar control, medications, and
management of complications. They can also provide a higher level of care to those with diabetes than can the disease management nurse (Powers et al., 2015).

CASE  (continued)

PROGRAM COMPLETION
Sharon, the disease management nurse, continued to work with Mr. Smith for a period of ten months to evaluate his progress and increase his adherence to the standards of care for individuals with heart failure. Most recently, Mr. Smith shared with her that he had worked with the registered dietitian to develop a low-sodium meal plan, leading to fewer episodes of swelling in his lower extremities.

The pharmacist, Greg, also followed up with Mr. Smith and recommended he change the timing of his diuretic so that he would not experience the symptom of urinary urgency and frequency while he was at work. He also advised Mr. Smith to speak with his physician to discuss the use of angiotensin converting enzyme (ACE) inhibitors to prevent remodeling of the heart that is often seen with individuals with heart failure. Mr. Smith’s physician made changes to the medication regimen that not only decreased many of the side effects Mr. Smith was experiencing but also improved his ability to adhere to the prescribed regimen.

On the end-of-program survey, Mr. Smith shared his satisfaction with the services provided by the health plan and expressed his willingness to participate in the disease management program if he has additional needs in the future.

FACTORS, POLICIES, AND PRACTICES INFLUENCING THE FUTURE

Today’s methods of delivering healthcare are changing based on demands from employers, health plans, the federal government, healthcare professionals, and consumers.

- Employers want programs across the continuum of care, control over healthcare expenses, and decreased worker compensation claims.
- Health plans must provide greater value for their clients in order to stay competitive.
- Federal programs must provide care to an ever-increasing number of people with chronic medical conditions and in the context of changing health laws.
- Healthcare professionals are tasked with providing higher quality of care, at lower cost, and to larger populations with multiple chronic medical conditions.
- Consumers want coordinated care throughout the healthcare system and their health plan, with individualized health information when and where they need it.
The most prominent changes in how care is and will be provided to meet these demands are based on:

- Provisions of the Affordable Care Act
- Application of the Patient-Centered Medical Home model
- Implementation of the patient-centered care recommendation by the IOM
- Adoption of the Accountable Care Organization model
- Impacts due to emerging models of payment
- Adoption of the Population Health Management model
- Emergence of new communication technologies

Each of these initiatives is intended to improve the care of populations, decrease the cost of care, and improve the satisfaction of the patient experience—which has been referred to as the “triple aim” (IHI, 2014).

The disease management model of care must also change to ensure it is able to provide measurable value to health plan members, health systems, and clients of disease management programs.

**Affordable Care Act (ACA)**

The Patient Protection and Affordable Care Act, also referred to as the Affordable Care Act or “Obama Care,” became law on March 23, 2010, and is part of the federal government’s efforts to reform healthcare. The ACA contains many separate provisions that have (or will have) a significant impact on how healthcare is practiced in the United States and how disease management is practiced.

The main provisions of the ACA are to expand access to healthcare services, provide preventative services, improve quality, increase the healthcare workforce, and decrease healthcare costs (NCSL, 2011).

Prior to the passage of the ACA, 32 million persons did not have health insurance, in part because employers were not required to provide health insurance for employees and individuals were not obligated to purchase health insurance. The ACA requires all businesses, except small businesses with less than 50 employees, to provide health insurance for their employees or face a fine for each uninsured employee and all individuals to obtain health insurance or similarly face a fine. As a result, many newly insured Americans with chronic medical conditions now require disease management services (Shaffer, 2013).

Prevention is a key component of the ACA, and public health programs are going to play a significant role in primary prevention. The ACA provides funding to create the National Prevention, Health Promotion, and Public Health Council, which directs public health efforts to create tobacco cessation programs, nutrition programs, and physical activity programs to combat
the most prevalent lifestyle risk factors that lead to the development of chronic medical conditions. The ACA also provides several mandates to include screenings and preventive vaccinations for pneumonia and influenza. These provisions are in direct alignment with disease management programs of today and will shape the future of disease management.

With millions of newly insured individuals entering the healthcare system, there is also a need for a larger number of highly trained health professionals. The ACA mandates increasing the size and efficiency of the healthcare workforce by expanding the number of training programs for nurses and implementing new models of primary care and the management of chronic medical conditions. These changes will result in the need to expand disease management programs as a means to decrease healthcare costs through appropriate self-management practices by those with chronic medical conditions.

**Patient-Centered Medical Home (PCMH)**

The patient-centered medical home is a relatively new model of healthcare delivery designed to improve care to patients, decrease costs, and increase member satisfaction (the “triple aim”). By definition “a patient-centered medical home is a model of care that strengthens the physician-patient relationship by replacing episodic care with coordinated care and a long-term healing relationship” (NCQA, 2014).

In the PCMH model, each member has an ongoing relationship with a personal physician who leads a team of professionals at a single location that takes collective responsibility for member care by providing for the member’s healthcare needs and arranging for appropriate care with other qualified clinicians. The PCMH is intended to result in more personalized, coordinated, effective, and efficient care. “A medical home achieves these goals through a high level of accessibility; providing excellent communication among patients, physicians, and staff; and taking full advantage of the latest information technology to prescribe, communicate, track test results, obtain clinical support information, and monitor performance” (NCQA, 2014).

The PCMH is built on the chronic care model of health in that it provides education to patients with chronic medical conditions to teach them how to assess and self-manage their condition with the intent of avoiding emergency department visits and hospitalizations. The PCMH can be viewed as a disease management program for physician practices, focusing on the same priorities that health plan disease management programs have focused on for over two decades.

**Patient/Family-Centered Care**

If the IOM recommendations for patient-centered care are fully implemented (see “A Shift in Models of Care” earlier in this course), there will be some dramatic changes in the “look and feel” of healthcare. Patients will be viewed as competent, knowledgeable individuals who are capable of full involvement in their healthcare decision-making process. Healthcare providers will need to change the way they interact with members and families, moving from a deficit worldview, with its paternalistic treatment of patients, to a competency worldview, which acknowledges and validates the experience that patients bring to the healthcare setting.
Accountable Care Organizations (ACOs)

Accountable Care Organizations constitute a voluntary effort by physicians, hospitals, and ancillary healthcare providers to promote higher-quality care through the coordination of care across the healthcare system. ACOs were started by Medicare to improve care and decrease healthcare costs. Commercial health plans are now following this model (CMS, 2015). Their primary goal is to ensure all providers are delivering high-quality care, avoiding duplicated and unnecessary tests and procedures, and preventing medical errors. As an incentive, healthcare providers can receive from Medicare a percentage of any cost savings that results from their efforts, just as disease management programs have done for over two decades.

Emerging Models of Payment

One of the most dramatic and sweeping changes in all of healthcare are the changes taking place in the reimbursement of healthcare services. Historically, healthcare has been paid for by health plans to medical providers based on the types and numbers of tests, procedures, and treatments completed for each individual. This volume-based approach to care has not led to improvement in the quality of members’ health in many cases but to increasing costs. Changing viewpoints on how care should be reimbursed and a greater focus on improvement in healthcare outcomes has led to programs such as pay-for-performance, bundled payments, and other reimbursement models.

A provision of the ACA is value-based purchasing, a pay-for-performance system that seeks to reward efficiency in healthcare. Components of value-based purchasing include processes of care (adherence to core measure), patient satisfaction (HCAHPS scores), efficiency, and outcomes including readmission rates. Value-based purchasing is funded by withholding a percentage of Medicare diagnosis-related groups (DRG) reimbursement for all Medicare recipients receiving care. This withholding is pooled, and payments are made to hospitals that meet or exceed national benchmarks for their value-based purchasing scores.

Implementing a pay-for-performance system is designed to improve quality for all individuals receiving healthcare services, which has the potential to stabilize disparities in care that are common in an acute/medical model of healthcare. Patient satisfaction comprises a large percentage of value-based purchasing scores, and it can be impacted by adopting patient/family-centered care.

Population Health

The expansion of the disease management model has led to the concept of population health, defined as “the health outcomes of a group of individuals, including the distribution of such outcomes within the group” (Kinding & Stoddart, 2003). Its primary objective is to improve the health of the population by decreasing the need for people to utilize expensive care such as emergency departments or hospitalization for avoidable issues.
The future of disease management is already taking shape and evolving into the population health management (PHM) model, which encompasses all aspects of care along the continuum of health and for all ages of patients. Similar to traditional disease management programs, population health includes processes for identification, assessment, and stratification of program members. Where the member falls on the healthcare continuum determines the condition-specific and patient-centered interventions that will guide the program.

Program outcomes include psychosocial, behavior change, clinical and health status, productivity, individual satisfaction, quality of life, and financial. The model also includes continuous quality improvement measures to improve both operational and individual interventions.

The primary focuses remain closing gaps in care and increasing individual self-management knowledge and skills. PHM builds on the models of disease management, wellness, and health promotion to decrease population risk by directly relating population outcomes to reimbursement.

**Emerging Technologies**

The future of disease management includes changing the way the disease management team interacts with members through the use of technology and providing services across the continuum of health. For instance, the advent of smartphones and apps to connect members with their health plan will provide future opportunities for member engagement with disease management programs. These developments are still in their infancy but hold promise in applying disruptive technologies to decrease the cost of healthcare and increase access to it as well.

**CONCLUSION**

The pressures on today’s healthcare system clearly demonstrate that managing a population with increasing chronic health conditions will shape the future of the system. In this environment, the disease management model offers the potential to decrease healthcare costs and to maximize the health outcomes of program participants. An expansion in the application of disease management practices will consequently require additional knowledge and skills among healthcare professionals, including motivational interviewing, stages of change, and effective telephonic interactions to fully realize its potential.

Yet even with the implementation of disease management programs, the costs to manage chronic medical conditions are at risk for increasing. Thus, a wider perspective must be applied to the future of disease management—factoring in advancements in medicine, new models of care, changing payment models, and the use of cutting-edge technology.
RESOURCES

Chronic care model diagram
http://www.improvingchroniccare.org/index.php?p=The_Chronic_CareModel&s=2

Health care/system redesign (Agency for Healthcare Research and Quality)

Health costs (Kaiser Family Foundation)
http://kff.org/health-costs/

HEDIS measures (National Committee for Quality Assurance)

Improving quality of care through disease management (American Heart Association)
http://circ.ahajournals.org/content/109/21/2651.full

Improving Chronic Illness Care
http://www.improvingchroniccare.org

Institute for Healthcare Improvement
http://www.ihi.org

“Is there a business case for diabetes disease management?”

Population Health Alliance
http://www.populationhealthalliance.org

Recommended core measures (Centers for Medicare and Medicaid Services)
https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Recommended_Core_Set.html

REFERENCES


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TEST

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1. The Population Health Alliance defines disease management as a system of coordinated healthcare interventions and communications for populations with conditions in which:
   a. Medication treatment is significant.
   b. Exercising four times per week is essential.
   c. Patient self-care efforts are significant.
   d. Patient symptoms are self-limited.

2. Which is considered to be a pressure that led to the emergence of the disease management model of care?
   a. The aging population of Americans
   b. The decreasing cost of healthcare services
   c. The low prevalence of chronic medical conditions
   d. The high quality of healthcare in America

3. In 2014, patients across all age groups received the care recommended by healthcare practitioners approximately what percentage of the time?
   a. 20%
   b. 40%
   c. 50%
   d. 70%

4. An early attempt by health plans to control healthcare costs by creating networks of doctors and hospitals was called:
   a. Utilization review boards.
   b. Fee-for-service providers.
   c. Case management associations.
   d. Managed care organizations.

5. Utilization review was developed to examine which aspect of healthcare services?
   a. The medical necessity of the treatment
   b. The healthcare professional’s credentials
   c. The educational services provided
   d. The patient’s out of pocket costs
6. According to the healthcare system recommendations of the Institute of Medicine, care should be customized according to the needs of:
   a. The healthcare system.
   b. The health insurance plans.
   c. Physicians.
   d. Patients.

7. A “fix the problem” approach to illness is characteristic of which healthcare model?
   a. Acute care model
   b. Chronic care model
   c. Continuum of care model
   d. Disease management model

8. Which is an essential element of the chronic care model of healthcare?
   a. Decision-making by the provider
   b. Scheduled immunizations for everyone
   c. Self-management support
   d. Lack of coordinated systems

9. A key objective of self-management support is to increase patient confidence, which is also called:
   a. Self-efficacy.
   b. Self-reporting.
   c. Self-dependency.
   d. Self-actualization.

10. The value proposition for disease management programs is to:
    a. Manage the number of employee work days missed due to injury.
    b. Improve the dietary habits of members.
    c. Decrease healthcare costs by applying evidence-based guidelines.
    d. Improve access to medical and surgical services.

11. Three primary objectives of the disease management model are to support the healthcare provider plan of care, prevent disease exacerbation, and:
    a. Create a behavioral health care plan for each individual.
    b. Adjust medications for chronic conditions.
    c. Ensure each individual receives care from specialists.
    d. Improve the overall health of individuals.
12. In the context of disease management, a “care gap” is defined as occurring when:
   a. Healthcare professional does not accurately diagnose a member’s disease.
   b. Member experiences a disparity between his or her needs and the services he or she receives.
   c. Prescribed medication does not alleviate the member’s symptoms.
   d. Member’s condition does not improve despite the care he or she receives.

13. In the disease management industry, evidence-based medicine is also referred to as:
   a. Best care available at the lowest cost.
   b. Standards of care.
   c. Best health one can hope to achieve.
   d. Standard operating procedure.

14. Behavior change as practiced by disease managers is based on the strategy of guiding people to make lifestyle changes according to:
   a. Their own reasons to change.
   b. Their physician’s instructions.
   c. The latest scientific findings on their condition.
   d. Practice-based evidence.

15. The preparation phase in the Stages of Change Model is characterized by:
   a. Taking steps to replace an unhealthy habit with a healthy habit.
   b. Adhering to a new healthy habit for less than six months.
   c. Practicing a healthy habit for at least six months.
   d. Unawareness that one’s health is at risk.

16. Patient satisfaction is which type of disease management outcome measure?
   a. Humanistic
   b. Clinical effectiveness
   c. Utilization
   d. Indirect
17. The primary objectives for a nurse in a disease management program are to ensure that members are taught the standards of care for their condition; how to recognize, treat, and prevent symptoms; and how to:
   a. Assess their current nutritional status.
   b. Self-manage their health condition.
   c. Navigate the healthcare system.
   d. Apply for assistance in paying for their prescriptions.

18. Which is a provision of the Affordable Care Act?
   a. To limit access to healthcare services
   b. To increase the healthcare workforce
   c. To decrease preventative healthcare services
   d. To reduce the role of private health insurers

19. The patient-centered medical home is defined as a model of care that strengthens the physician-patient relationship by replacing episodic care with:
   a. Daily visits by a rotating team of physicians.
   b. Annual physicals and increased lab tests for each patient.
   c. Coordinated care and a long-term healing relationship.
   d. Care delivered during team visits to the patient’s home.

20. Population health management includes a focus on closing gaps in care and:
   a. Increasing self-management knowledge and skills.
   b. Measuring success according to hospital admissions.
   c. Increasing the use of diagnostic procedures.
   d. Reducing the reliance on quality-improvement measures.